

IDEAL POWER CONVERTERS

LIGHTWEIGHT PV INVERTERS

PROJECT TITLE:	Dual Bi-Directional IGBTs Modules Enables Breakthrough PV Inverter Using Current Modulation Topology		
ORGANIZATION:	Ideal Power Converters (IPC)	LOCATION:	Austin, TX
PROGRAM:	Solar ADEPT	ARPA-E AWARD:	\$2,500,000
TECH TOPIC:	Power Conversion	PROJECT TERM:	1/30/12 – 1/29/15
WEBSITE:	www.idealpowerconverters.com		

CRITICAL NEED

Photovoltaic (PV) solar systems convert the sun's energy into electricity, but only a small percentage of the sunlight that reaches a PV system is converted into useful electricity. This is due in part to the inefficient and failure-prone electrical components used in most PV systems today. Improving the performance of these components would lower the overall cost of PV systems—helping to make renewable solar energy cost-competitive with conventional, nonrenewable forms of electricity generation.

PROJECT INNOVATION + ADVANTAGES

PV inverters convert DC power generated by modules into usable AC power. IPC's initial 30kW 94lb. PV inverter reduces the weight of comparable 30kW PV inverters by 90%—reducing the cost of materials, manufacturing, shipping, and installation. With ARPA-E support, new bi-directional silicon power switches will be developed, commercialized, and utilized in IPC's next-generation PV inverter. With these components, IPC will produce 100kW inverters that weight less than 100lb., reducing the weight of conventional 3,000lb. 100kW inverters by more than 95%. The new power switches will cut IPC's \$/W manufacturing cost in half, as well as further reduce indirect shipping and installation costs.



IMPACT

If successful, IPC would reduce the weight of PV system components by 95%—significantly reducing the cost to manufacture, ship, and install PV systems.

- **SECURITY:** Lowering the cost of PV systems would help increase the use of solar energy, which in turn would decrease our dependence on fossil fuels and improve U.S. energy security.
- **ENVIRONMENT:** Solar energy systems create zero harmful emissions while providing energy to homes and businesses, so their widespread use would significantly improve air quality.
- **ECONOMY:** This project could help position the U.S. as a leader in the power electronics industry.
- **JOBS:** Widespread use of residential and commercial PV systems could create jobs for system installers, technicians, and salespeople.

CONTACTS

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